MODIS Technical Team Meeting
Thursday, January 16th, 2003
Building 33, Room E125

Vince Salomonson chaired the meeting. In attendance were Bob Barnes, Dorothy Hall, Jack Xiong, Wayne Esaias, Ed Masuoka, Robert Wolfe, Steve Kempler, Shaida Johnston, Eric Vermote, Skip Reber, Mike Teague, Michael King, and Barbara Conboy, with Yolanda Harvey taking the minutes.

1.0 Upcoming events

- Semi-annual Reports Due January 15, 2003, covering period July-December 2002.
- MODIS Oceans Workshop, February 3-4, 2003, New Hampshire, USA
- Data Products Review March 10-11, 2003
- Ocean Color Meeting, April 15-17, 2003, Miami, Florida, USA.
- IGARSS 2003, July 21-25, 2003, Toulouse, France (abstracts due by January 17, 2003). http://www.igarss03.com/
- 10th International Symposium on Remote Sensing by The International Society for Optical Engineering (SPIE). September 8-12, 2003, Barcelona, Spain (abstracts due by February 10, 2003). http://www.spie.org/info/rs

2.0 Meeting Minutes

2.1 General Discussion

Salomonson reported that the Data Products Review will take place March 10 and 11, 2003. He has requested a three-hour time block for MODIS, but we will not find out for a while how much time we will have. He said that he wants to note the excellent efforts that have occurred in calibrating and characterizing the instrument along with the present status and what is necessary for the future to monitor the instruments and keep the Level 1 algorithms up to date. He hopes that there will be a way to describe what the MODIS team will continue to need to do in working with the User Community to keep MODIS data useful, available, and in use. Salomonson noted that this past Fall AGU meeting was a good indicator of MODIS' usefulness and productivity in that there were 82 papers that included MODIS. This is an index that represents the growing use of MODIS data for scientific studies.

Salomonson said that the Science Team Meeting could possibly occur during the second week of February and will only involve the Science Team members. He is considering it being a teleconference that would last no more than 3 hours. He said that he wants to focus on preparing for the Data Products Review and discuss items that may be related to the release of the EOS NRA (so-called "recompetition" NRA -- see http://research.hq.nasa.gov/code_y/open.cfm). Salomonson said that the MODIS input at the HQ review should be sure to address any and all questions requested by HQ.

King reported that the EOS NRA will be released January 30, 2003, letters of intent will be due on February 28, 2003, proposals will be due on April 15, 2003, selections will be made by September 14, 2003, and awards will be made on or around December 14, 2003.

Reber asked whether the Collection 1 data have been supplanted by the newer data, and Salomonson said yes, they have.

Bob Barnes reported that Brian Frantz will present a SeaDAS demonstration with MODIS data for Gene Feldman at the February Oceans workshop. In developing this demonstration, it was found that there are a great number of file types in MODIS Level 3 Ocean Color Measurements (including temperature), which could be cumbersome for casual users and could be a factor in limiting the usefulness of MODIS data. Masuoka added that many users would appreciate getting data in a global file format that isn't too large.

Esaias said that he heard that SIMBIOS is getting ready to process their Level 1 into Level 2 data. Barnes added that SIMBIOS is now dedicated almost exclusively to work with MODIS ocean measurements, and that they requested Level 1 programs so that they can understand the processing of MODIS ocean data to Level 2.

2.2 Instrument Status

Xiong reported that both instruments are stable. On the yaw maneuvers, six were planned for January 15th and another six for January 16th, but one was dropped from each day. The last set of maneuvers was finished at 3:30 p.m. on the 16th.

Xiong reported that he attended a meeting on using the SRCA for Aqua SMIR {are you sure this isn't SWIR?] bands crosstalk calibration, and they got approval from Santa Barbara to do so.

Johnston asked about the status of the Aqua software patch for the November/December anomaly, and Xiong replied that that discussion has yet to take place.

2.3 DAAC

Kempler reported that Level 1 processing is going well, and there is a total of 1.1 petabytes of data in the DAAC archive. The Terra forward processing is going well, and they are slightly ahead of schedule for reprocessing. System availability is good; they are running at 90 percent or better.

2.4 MODAPS

Masuoka reported that MODAPS Terra reprocessing is currently at the June 8th 2000 data day, and they are proceeding with forward processing as of January 2003.

Wolfe reported on the geolocation problem. They had another meeting with the spacecraft people today (January 16) about the geolocation requirements and how close it [what is "it"?] is to meeting spacecraft requirements. One key requirement says that bias should not vary by more than 20 arc-seconds per hour, and that requirement is not being met. They are seeing a variation of 30 arc-seconds or more. The requirements are designed to avoid large within-orbit variations. Wolfe reported that they have involved thermal engineers because they think the problem may be due to a temperature effect.

This problem is affecting the release of Land products. As soon as they put in the sinusoidal grid changes on February 2nd, most of those Aqua Land products (250- and 500-meter) will be ready for release. Salomonson asked what will happens to the Land

products if the geolocation problems aren't fixed, and Masuoka replied that any products that combine Aqua and Terra data will be held up. Wolfe said that they can't get additional sampling from Aqua without that geolocation data. Esaias added that accurate geolocation is important to change-detection as well, and Wolfe said that this problem will reduce the effective resolution of multi-day composited products. It will likely affect BRDF detection by causing blurring that will make the product less useful. For things like Land Surface Temperature and fire detection, this may be less critical since they are at a coarser resolution (1km) and are not as dependent on large-view zenith angle observations. Snow products will also be affected because they are produced at 500m, and Oceans products will be affected in terms of uncertainties. Masuoka asked if Mary Cleave had any interest in this issue, and Wolfe said that yes, she is interested in anything that would delay the release of Aqua products. King said that he had told Mary Cleave at the Center MSRs that this geolocation issue would affect Land, but not Oceans, and Esaias confirmed that Oceans will not be greatly affected. What would be affected are the coastal areas, though the data will still be better than heritage data.

Wolfe concluded that they are getting support on the issue and are developing an empirical fit to the within-orbit errors. They plan on modifying the geolocation software to use a LUT with a model of the within-orbit variations to allow the deviations to be removed from the data. Developing a thermal model will be especially helpful for the Polar Regions, since they don't have a good idea of what is happening there. A lot of work would also be required to measure deviations at night. Salomonson noted that all of this is still under study and no conclusions about any negative effects should be drawn until the study is completed. It may very well be that the problem will be identified and the relevant solutions developed so that MODIS Aqua geolocation results will continue to be of high quality for geolocation, as has been the case with Terra.

2.5 Land Discipline

Vermote reported that they have started releasing a number of Land products from Collection 4, including LST and Snow. Salomonson noted that as soon as minor adjustments to the MODIS (December 2002 revision) CDs introduction letter are made, production on the CD will go forward.

Masuoka asked whether some of the Land 1-kilometer products are provisional, and Vermote said that they are. Masuoka suggested that Land might want to look at Collection 4 and see what's ready so that they can declare where they are on Aqua data product quality status.

2.6 Oceans Discipline

Esaias reported that Oceans is having a workshop on February 3 and 4, 2003, at the University of New Hampshire, and 26 people have signed up already. He added that they will have DAAC and SYMBIOS help at the workshop. Esaias said that he is working with David Herring on the Channel Island program. He noted that there was an elemental sulfur eruption off of South Africa recently that is very interesting and will make for good images from the Land people.

Esaias gave a presentation as to what the Oceans proposal for piggyback reprocessing will mean to the Land and Atmospheres disciplines reprocessing. The piggyback reprocessing will begin with data day 2001-240, which will likely occur on May 10, 2003.

Calibration problems with the visible data products are driving the reprocessing; however, it will also increase the accuracy of the SST product. The potential impact is a delay for Land and Atmospheres reprocessing of one to two months.

Esaias continued that they would still call this data Collection 4, but they would add to the file ID that it is version 4.06. Esaias showed slides of m1 trending on Bands 8 and 9, and explained that there are problems in how they calibrate and extrapolate these m1 values into the future. He said that Oceans is asking to join the Land and Atmospheres reprocessing stream at data day 240; because the L1Bs are being reprocessed anyway, they will not be doing this just for Oceans. This will make a big difference to the ocean leaving radiances if they can reprocess using all L1B version 4 data (instead of the current mixture of version 3 and 4). Version 4.2 is being used presently, Oceans is suggesting using SST version 4.5 in the piggyback. This will give a better cross-scan, and make day and night data more congruent (especially in the water vapor regions). They are currently missing some cloud effects (primarily a night time problem), and both the SST and Wisconsin cloud masks suffer as a result. They may get some relief in using AMSR-E data, and possibly the ADEOS-2 microwave reference field, for Aqua. The 4-micron night SST product would become valid from day 2001-240 onward, and thermal SST would be improved. SST is required for the ocean color product, so that would be affected, too.

Esaias said that with the help of MCST, they have developed an improved approach for dealing with these m1 variations, using "real m1s" instead of determining the values by extrapolation. For the forward stream, Esaias proposed using updated Level 1 LUTs and making extrapolations based on those LUTs every two to six weeks. The University of Miami has also agreed to update the PGE09 radcore files in sync with the Level 1 LUTs. This requires a streamlined PCR I&T modeled after the DAAC L1 LUT approach, and would provide much-improved (but still not a final) Oceans visible product for forward processing, NOAA, and direct broadcast stations. This would also help provide real-time information to weather stations. Masuoka asked if this is something that we would have wanted to do anyway, and Esaias said yes, this change would be very close to current MCST processes. Bob Barnes added that the SeaWiFS people have looked at the trending, and think that the trends may contain oscillations. Knowing what the oscillations are may help with extrapolation into the future.

Esaias continued that Oceans is suggesting using those real m1 values (MCST LUT version 4.12) in reprocessing for data beginning September 2002, and Land and Atmospheres products will benefit from it. Version 4.12 appears to be identical to the present 4.09 version previous to September 2002 (MODAPS will reach that reprocessing point in August), and that they will need to put version 4.12 into operations at the GESDAAC by May of 2003. Masuoka said that Mike Teague and Gary Alcott at the GDAAC need to work out how to get the version incorporated at the right points, and Johnston noted that it should only be a forward stream issue. Vermote said that Land is okay with this proposal, and Esaias said that Atmospheres would finish their cycle in mid-December 2003 instead of mid-October. Wolfe said that date projections will improve as we do demonstrations, and we will be better able to tell what kind of x-rates we can expect. King said that Atmospheres will make its decision after the recompetition.

Esaias reported that the Oceans CDs are close to completion.

2.7 Atmospheres Discipline

King reported that he has had Paul Hubanks working on new Atmospheres data processing calendars; the idea is to have the different Terra and Aqua products listed by month, showing PGE numbers used in processing, their validation status, and provide links to DAAC calendars for information on individual data days. He said that this calendar can be kept current fairly easily. Johnston asked if it can keep track of the L1B versions, and King said that that would be hard to visually incorporate into the calendar. He said that it will take Hubanks about a month to fill in all the information .

On the Data Product Handbook, King said that all the Atmosphere references are now up to date for the data products, but he's not sure where the other disciplines stand. People have been submitting updates, and work is moving forward.

King reported that the Project Science Office is producing CDs of the L'Aquila, Italy course on 'Remote Sensing of the Earth's Environment from Terra' that was held in August.

2.8 Cryosphere

Hall reported that there will be a field experiment on sea ice north and west of Alaska during most of the month of March 2003. Hall said that she will not be going, but Don Cavalieri and others will go. Salomonson reported that there is a (slight) chance that the Terra Deep Space Maneuver will occur in March, so it may affect the Alaska sea ice field experiment. King added that the experiment will be an Aqua MODIS / AMSR validation experiment for snow and sea ice.

3.0 Action Items

3.1 New Action Items

None.

3.2 Old Action Items

3.2.1 King and Kempler to work together on getting ESDTs for the new Atmospheres L2 data product.
Status: Open.

3.2.2 Kempler to coordinate with Oceans group on creating documentation for the DAAC on the new Oceans L1A data subsets.
Status: Open.

3.2.3 Wolfe to contact Herring about the shopping cart feature for the Earth Observatory website.
Status: Open.

3.2.4 Tech Team to further discuss TRW using MODIS data for validation of the NPP/NPOESS production process.
Status: Open.